NOTICE OF INTENT TO AWARD

This Funding Announcement is not a request for applications. This announcement is to provide public notice of the U.S. Geological Survey's intention to fund the following project activities without full and open competition.

ABSTRACT	
Funding Announcement	USGS-16-FA-0277
Project Title	Establishing the Soil Properties Monitoring and Forecasting Demonstration System by Integrated Satellite Remote Sensing, In-situ Ground Measurements, and Model Simulations
Recipient	George Mason University
Principal Investigator / Program Manager	Dr. John Qu
Anticipated Federal Amount	$64,473
Cost Share	No
Total Anticipated Award Amount	$64,473
New Award or Continuation?	New award
Anticipated Period of Performance	August 15 2016 to May 31 2017
Award Instrument	Cooperative Agreement
CFDA # and Title	15.808
USGS Point of Contact	Dr. Zhiliang Zhu

1. OVERVIEW

George Mason University will conduct research on how different land management practices affect carbon already stored in ecosystems, and the capacity of ecosystem to add more carbon sequestered in biomass and soils. This research focuses on public, protected land management problems, particularly wetlands managed by the Department of the Interior with conservation of habitation conditions as one of management objectives. The focus of this PhD dissertation research will be on:

1) Developing estimation and monitoring methods for soil moisture content. The objectives of the research include investigating integrated time-series soil moisture estimation methods by combining in-situ soil moisture data and satellite remote sensing observations, such as SMAP, SMOS and MODIS products, and studying relations between soil moisture and environmental and anthropogenic controls such as land management, as well as biophysical variables such as vegetation composition.

2) Relating and analyzing ongoing wetland restoration projects in the field in relation to change in soil moisture and changes in other key ecosystem attributes such as vegetation composition, peat production, carbon storage and habitat conditions. Developing quantitative standards and parameters that would be incoroproated into predictive modeling to guide climate change mitigation and adaptation planning efforts.

The primary interest of this study is wetland ecosystems under protection and managed by the Department of the Interior.

This opportunity builds on collaboration between the USGS, DOI land managers, and the receipent institute. Scientists and land managers from both sides will address questions of mutual interest (e.g. What are relative compositions and structure characteristics of wetland ecosystems under different management regimes? How will change in soil moisture due to restoration efforts correspond to carbon storage and sequestration?) The PhD student will conduct his or her research in close consultation with land managers and scientists.

2. RECIPIENT INVOLVEMENT

The recipient institute will be an active participant of the opportunity through a sponsored PhD study and research carried out by both the student, professors, and scientists from USGS. Primary responsibilities are: 1) Working with USGS scientists to define the scope of the study including: priorities and hopotheses, research sites, expected deliverables, communication approach, and reporting methanisms. 3) Developing methods (remote sensing, field sampling protocol, and analytical methods) and publishing them. 4) Calibrating and validating results of the study such that errors, uncertainites, and confidence in results are well quantified according to rigorous scientific practices. 5) Delivering research findings in science journals in a format that is useable to the public land management. 6) Playing a primary role in active communication between the receipent institute, the USGS, and the DOI land managers.

3. USGS INVOLVEMENT

Substantial involvement on the part USGS is anticipated for the successful completion of the objectives to be funded by this award. In particular, USGS will be responsible for the following:

The study will be carried out in close partnership with USGS scientists throughout the performance period. USGS responsibilities are: 1) working with the PhD student and recipient institute to set the overall scope, including: research priorities and hypotheses, expected deliverables, communication approach, and reporting methanism. 2) Faclitate communication between the receipent institute, DOI land managers and USGS, 3) On annual and semi-annual basis, review research progress, and based on satisfactory progress, make decisions on funding

support, 4) co-authoring science papers between the USGS and the recepient scientists, and 5) co-advising the student leading in the project.

SINGLE-SOURCE JUSTIFICATION

DEPARTMENT OF THE INTERIOR **SINGLE SOURCE POLICY REQUIREMENTS**
Department of the Interior Policy (505 DM 2) requires a written justification which explains why competition is not practicable for each single-source award. The justification must address one or more of the following criteria as well as discussion of the program legislative history, unique capabilities of the proposed recipient, and cost-sharing contribution offered by the proposed recipient, as applicable.
In order for an assistance award to be made without competition, the award must satisfy one or more of the following criteria: (1) Unsolicited Proposal – The proposed award is the result of an unsolicited assistance application which represents a unique or innovative idea, method, or approach which is not the subject of a current or planned contract or assistance award, but which is deemed advantageous to the program objectives; (2) Continuation – The activity to be funded is necessary to the satisfactory completion of, or is a continuation of an activity presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of the activity; (3) Legislative intent – The language in the applicable authorizing legislation or legislative history clearly indicates Congress' intent to restrict the award to a particular recipient of purpose; (4) Unique Qualifications – The applicant is uniquely qualified to perform the activity based upon a variety of demonstrable factors such as location, property ownership, voluntary support capacity, cost-sharing ability if applicable, technical expertise, or other such unique qualifications; (5) Emergencies – Program/award where there is insufficient time available (due to a compelling and unusual urgency, or substantial danger to health or safety) for adequate competitive procedures to be followed. (6) Cooperative Agreements - USGS Unique Authority cited at 43 U.S.C. 36d (Federal, State, and academic partners) or DOI Authority cited at 43 U.S.C. 1457b (not-for-profit organizations).

USGS did not solicit full and open competition for this award based the following criteria:

(4) UNIQUE QUALIFICATIONS

Single Source Justification Description:

The USGS and George Mason University have an ongoing collaborative relationship in conducting applied research at the Great Dismal Swamp (GDS) National Wildlife Refuge, a land management unit under the Department of the Interior Fish and Wildlife Service. A PhD student is currently a central part of an large, existing study at GDS. The intent of this award is to sponsor a second PhD study that would be an extension of the current project at GDS. This project is important for the overall interest at GDA because the reseach will allow for expanded monitoring and study of ecosystem restoration and support of public land management.

STATUTORY AUTHORITY

§ 36d. Cooperative agreements Notwithstanding the provisions of the Federal Grant and Cooperative Agreement Act of 1977 (31 U.S.C. 6301–6308), the United States Geological Survey is authorized to continue existing, and on and after November 10, 2003, to enter into new cooperative agreements directed towards a particular cooperator, in support of joint research and data collection activities with Federal, State, and academic partners funded by appropriations herein, including those that provide for space in cooperator facilities.